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09/555,295	05/26/2000	ERICH GOTTWALD	P00.0760	3797

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EXAMINER

LI, SHI K

ART UNIT PAPER NUMBER

2633

DATE MAILED: 02/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/555,295

Applicant(s)

GOTTWALD, ERICH

Examiner

Shi K. Li

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 1-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-28 and 30-51 is/are rejected.
- 7) ☒ Claim(s) 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 26 May 2000 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 22, 24-25, 27-28, 31-35, 38, 41 and 45-46 are rejected under 35 U.S.C. 102(e) as being anticipated by Inagaki et al. (U.S. Patent 5,745,283).

Regarding claims 22, 24-25, 31-35 and 45-46, Inagaki et al. discloses in FIG. 6 an optical amplifier with gain control. In FIG. 6, the maximum wavelength of the signal is 1.55 μm .

Inagaki et al. detects the signal power with detectors 24 and 26. FIG. 6 includes the injection of a pump light of 1.57 μm via laser 40 and a pump light of 0.98 μm generated by light source 14 into the optical conductor 12 based on the result of the signal power measured by the detectors.

Inagaki et al. describes in col. 4, lines 41-53 the controlling of the tilting of the optical signal by varying the wavelength and power of the pump source.

Regarding claims 27-28, Inagaki et al. includes in FIG. 6 pump signal of wavelength 0.98 μm generated by light source 14. The wavelength 0.98 μm is less than the minimum wavelength of the optical signal which is 1.54 μm .

Regarding claims 38 and 41, the pump light generated by light source 40 is injected at a receiving end of the optical conductor and the pump light generated by light source 14 is injected at a transmission end of the optical conductor.

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Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 21, 42, 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inagaki et al. (U.S. Patent 5,745,283) in view of Kidorf et al. (U.S. Patent 6,081,366).

Inagaki et al. discloses in FIG. 6 an optical amplifier with gain control. In FIG. 6, the maximum wavelength of the signal is 1.55 μm and the minimum wavelength of the signal is 1.54 μm . Inagaki et al. detects the signal power with detectors 24 and 26. FIG. 6 includes the injection of a pump light of 1.57 μm via laser 40 and a pump light of 0.98 μm generated by light source 14 into the optical conductor 12 based on the result of the signal power measured by the detectors. Inagaki et al. describes in col. 4, lines 41-53 the controlling of the tilting of the optical signal by varying the wavelength and power of the pump source. The difference between Inagaki et al. and the claimed inventions is that Inagaki et al. does not discuss the selecting of wavelength for the light source 14.

Kidorf et al. teaches in col. 3, lines 19-62 the selection of wavelength for the first light source. As described by Kidorf et al., the wavelength affects the performance and gain profile of the amplifier. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to select wavelength for the first light source, as taught by Kidorf et al., in the optical amplifier of Inagaki et al. because the wavelength of the light source affects the performance and gain profile of the amplifier.

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5. Claims 26, 30, 45, 47 and 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inagaki et al. (U.S. Patent 5,745,283) in view of Chikuma et al. (U.S. Patent 6,055,093).

Inagaki et al. discloses in FIG. 6 an optical amplifier with gain control. In FIG. 6, the maximum wavelength of the signal is 1.55 μm and the minimum wavelength of the signal is 1.54 μm . Inagaki et al. detects the signal power with detectors 24 and 26. FIG. 6 includes the injection of a pump light of 1.57 μm via laser 40 and a pump light of 0.98 μm generated by light source 14 into the optical conductor 12 based on the result of the signal power measured by the detectors. Inagaki et al. describes in col. 4, lines 41-53 the controlling of the tilting of the optical signal by varying the wavelength and power of the pump source. The difference between Inagaki et al. and the claimed inventions is that Inagaki et al. does not include a pump source for the condition of an absence of a signal level. Chikuma et al. discloses in FIG. 3 an optical amplifier. FIG. 3 includes a plurality of transmitters 1 and 2, measuring device 5, a plurality of pump sources 16 and 23. The device 5 detects absence of signal and controls the pump source 16 as described in col. 5, lines 41-46. The light source 23 keeps the gain at a constant level. Without detecting the absence of signal channels and the pump source for compensating the absence of the signal channel, the other channels may be over-amplified. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the detector for detecting the absence of signal channel and add a compensation pump source when a signal channel is missing, as taught by Chikuma et al., in the optical amplification system of Inagaki et al. because such an arrangement avoids over-amplifying the remaining channels when a signal channel is absent.

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Regarding claim 51, Chikuma et al. teaches in FIG. 3 the transmitting portion on the left-hand side of coupler 17 and receiving portion on the right-hand side of coupler 19. Chikuma et al. includes an optical amplifier 8 which is controlled by the controller 5.

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inagaki et al. (U.S. Patent 5,745,283) in view of Bergano et al. (U.S. Patent 5,173,957).

Inagaki et al. has been discussed above in regard to claims 22, 24-25, 27-28, 31-35, 38, 41 and 45-46. The difference between Inagaki et al. and the claimed invention is that Inagaki et al. only has one pump source that has a wavelength greater than the maximum wavelength of the optical signal. Bergano et al. teaches the need for redundancy light source and discloses in FIG. 2 the use of two pump lasers at the receiving end of the fiber 10. The use of two lasers increases the reliability and power of the pump source. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the light source 40 in FIG. 6 of Inagaki et al. with two pump lasers of the same wavelength, as taught by Bergano et al., because using two pump lasers increases the reliability and power of the pump.

7. Claims 36, 39 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inagaki et al. (U.S. Patent 5,745,283) in view of Zanoni et al. (U.S. Patent 5,991,070).

Inagaki et al. has been discussed above in regard to claims 22, 24-25, 27-28, 31-35, 38, 41 and 45-46. The difference between Inagaki et al. and the claimed inventions is the directions of the pump signals. Inagaki et al. explains in col. 4, lines 54-56 that the directions of the pumping light are not limited to those shown in FIG. 6. Zanoni et al. explains in col. 1, line 66-col. 2, line 5 that pump light can be applied at the receiving end or the transmission end. Zanoni et al. then discloses in FIG. 3 a configuration for pumping plurality of pump signals at both the

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transmission end and receiving end. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the pump signals at the transmission end, the receiving end or both the transmission end and the receiving end, as taught by Zanoni et al., in the optical amplification system of Inagaki et al. depending on the signal wavelength, power and transmission distance of the application.

8. Claims 37 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inagaki et al and Kidorf et al. as applied to claims 21, 42 and 44 above, and further in view of Zanoni et al. (U.S. Patent 5,991,070).

Inagaki et al and Kidorf et al. have been discussed above in regard to claims 21, 42 and 44. The difference between Inagaki et al and Kidorf et al. and the claimed inventions is the directions of the pump signals. Inagaki et al. explains in col. 4, lines 54-56 that the directions of the pumping light are not limited to those shown in FIG. 6. Zanoni et al. explains in col. 1, line 66-col. 2, line 5 that pump light can be applied at the receiving end or the transmission end. Zanoni et al. then discloses in FIG. 3 a configuration for pumping plurality of pump signals at both the transmission end and receiving end. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the pump signals at the transmission end, the receiving end or both the transmission end and the receiving end, as taught by Zanoni et al., in the modified optical amplification system of Inagaki et al. and Kidorf et al. depending on the signal wavelength, power and transmission distance of the application.

9. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inagaki et al. (U.S. Patent 5,745,283) in view of Kidorf et al. (U.S. Patent 6,081,366).

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Inagaki et al. has been discussed above in regard to claims 22, 24-25, 27-28, 31-35, 38, 41 and 45-46. The difference between Inagaki et al. and the claimed invention is that Inagaki et al. does not discussed the selection of wavelength for laser 14 of FIG. 6. Kidorf et al. teaches in col. 3, lines 19-62 the selection of wavelength for the first light source. As described by Kidorf et al., the wavelength affects the performance and gain profile of the amplifier. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to select wavelength for the first light source, as taught by Kidorf et al., in the optical amplifier of Inagaki et al. because the wavelength of the light source affects the performance and gain profile of the amplifier.

Allowable Subject Matter

10. Claim 29 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 703 305-4341. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703 305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9314 for regular communications and 703 872-9314 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-3900.

skl

February 2, 2003


LESLIE PASCAL
PRIMARY EXAMINER